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Roles of Multinational Companies in the Self-Sustenance of the Thai Automobile Industry: The Case of Toyota Motor Thailand

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1. Introduction

Thailand, which is called the “Detroit of Asia”, is becoming a production and export base for automobiles in ASEAN. In 2012 Thailand produced 2.452 million cars; 1,425,581 were sold in the domestic market and 1,026,671 were exported (see Table 1). The automobile industry is an important industry in Thailand, accounting for 7% of GDP. It has a very broad base, and it leads the economic development of Thailand⁽¹⁾.

In the Thai automobile market, Japanese companies account for 90% of the market. Toyota Motor Thailand (TMT) accounts for almost 40% of the market. In 2004 TMT started the production of Innovative International Multi-purpose Vehicle (IMV), which are sold all over the world, focusing upon emerging markets. The IMV was the first new car project which started in a foreign subsidiary without producing and selling in Japan. TMT is the most important center of the IMV project.

Main research topics related to multinational corporations have so far focused on two aspects: (1) entry mode, that is, exclusive ownership, and joint venture (majority, minority, and 50-50 ownership), green field, and M&A, and (2) transfer of competitive edges from parent company to foreign subsidiaries⁽²⁾.

Table 1 Production, Sales, and Export of Automobiles in Thailand

Year	1995	2000	2001	2002	2003	2004	2005
Production of Automobiles							
Passenger Cars	117,007	97,129	156,066	169,321	251,691	299,439	277,603
Commercial Vehicles	365,786	314,592	303,352	415,630	498,821	628,642	847,713
Total	482,793	411,721	459,418	584,951	750,512	928,081	1,125,316
Domestic Sales of Automobiles							
Passenger Cars	163,371	83,106	104,502	126,353	179,005	209,110	188,211
Commercial Vehicles	408,209	179,083	192,550	283,009	354,171	416,916	515,221
Total	571,580	262,189	297,052	409,362	533,176	626,026	703,432
Export of Automobiles							
Total		152,836	175,299	181,471	235,022	332,057	440,715
Year	2006	2007	2008	2009	2010	2011	2012
Production of Automobiles							
Passenger Cars	298,819	315,444	401,474	313,442	554,267	537,987	957,623
Commercial Vehicles	889,225	971,935	992,555	685,936	1,091,037	919,808	1,494,629
Total	1,188,044	1,287,379	1,394,029	999,378	1,645,304	1,457,795	2,453,717
Domestic Sales of Automobiles							
Passenger Cars	191,763	170,118	226,805	230,487	437,796	360,444	672,460
Commercial Vehicles	490,398	461,133	388,465	318,384	362,561	433,637	763,875
Total	682,161	631,251	615,270	548,871	800,357	794,081	1,436,335
Export of Automobiles							
Total	538,966	690,100	776,241	535,563	896,065	735,627	1,026,671

Source: "Car Statistic Report," The Thai Automotive Industry Association.

However, foreign subsidiaries have changed their relationships with parent companies by accumulating their own management resources. Transfer of management resources and know-how is now being undertaken from subsidiaries to parent companies and between subsidiaries. Self-sustenance of foreign subsidiaries creates MNC's overall sustainable competitive advantages.

Satoru Enomoto, Julian M. Birkinshaw, Yasuo Sugiyama and Nobuya Orihashi have pointed out the importance of subsidiaries' self-sustenance for multinationals. When we look at studies of foreign subsidiaries, we can find the following characteristics and problems. First, there are very few historical studies of foreign subsidiaries steps to self-sustenance by accumulating

their own knowledge and know-how. Second, studies which have demonstrated an awareness of the issues have dealt with very limited fields and periods. They have dealt with subsidiaries in advanced countries, not in developing countries. Third, many studies have pointed out the relationship between subsidiaries and outside management factors such as the host country's industrial and foreign capital policies. There are very few studies which have analyzed the relationship between subsidiaries and external actors in other industries fully and empirically⁽³⁾.

In developing and emerging countries, catching up with advanced countries is a national objective. It is necessary for a nation to develop industrial clusters. In developing countries, there is no base to develop an automobile industry. Therefore, organized efforts by government and multinationals are necessary. Multinational companies play particularly important roles as hubs to develop value chains including designing of products, manufacturing and procuring parts, assembling cars, selling, and after service.

In this value chain, we can find some actors. The first actor is the government of the country concerned. It exerts an influence on developing the industry through industrial policies. The second is multinationals such as assemblers and parts manufacturers, who bring products and know-how into Thailand. The third is local entrepreneurs who want to start their own business in the industry, including parts manufacturers and dealers. The fourth is local management and employees. Moreover, educational organizations such as universities and vocational schools, which provide the automobile industry with human resources, are also included⁽⁴⁾.

The purpose of this paper is to analyze how and why TMT established its solid status in the Thai automobile market, becoming an autonomous subsidiary to manufacture and export IMV without having a mother plant in Japan. In addition to an analysis of the management of TMT, we analyze how and why TMT managed to solve problems caused by the changes in the dynamic relationship between TMT and outside actors, which brought about the develop of an industrial cluster and the self-sustenance of TMT.

Considering the economic development of Thailand, industrial policies by the Thai government, and changes in the market structure and competitive conditions, the history of TMT was divided into six periods: (1) Entrance into the Thai market (1957 to 1977), (2) Responding to localization and the establishment of personnel and education systems (1978 to 1985), (3) Rapid growth of the automobile market and the response to liberalization policy (1986 to 1993), (4) The birth of the Asian Car and the currency crisis (1994 to 2003), (5) Establishment of an export base and global standard (2004 to 2006), and (6) Environmental problems and the development of an “Eco-car” (2007～).

2. Entering the Thai Market, 1956-1977

In 1950 Toyota Motor Sales Co. was separated from Toyota Motor Co., and the export business of Toyota was transferred to Toyota Sales. Toyota Sales began exporting at full swing in 1955. By this time, Toyota established its status in the Japanese market, and the Japanese government introduced the export promotion policy in cooperation with manufacturers.

Toyota collected basic data on the foreign automobile markets through the American *Automotive News* and on the economic situations in foreign countries from Bank of Tokyo. The situation at that time was explained as follows:

Considering the line-up and technological level of Toyota cars, it was definitely impossible to go into advanced country markets, and inevitably we had to develop markets in the developing countries where Western car manufacturers had not established a sure foothold. We introduced a policy to find a foothold to expand markets targeting Southeast Asia and Middle and South America. Particularly in Southeast Asia, advanced Western manufacturers skimmed on their own work⁽⁵⁾.

Toyota decided on some policies in order to develop the overseas markets: (1) Establishing an after-service system before sales, (2) avoiding reliance

upon general trading companies as much as possible, and (3) avoiding direct competition with American automobile companies.

Toyota Motor Sales Co. began developing the Thai market after opening the representative office in January 1956. Toyota changed distributors four times in two years because they were not capable. Therefore, Toyota changed its policy and established the Bangkok Sales Office in February 1957 to make Thailand a center for developing the Southeast Asian Market. Toyota was the first Japanese automobile company which had a foreign base after WWII. This sales office was upgraded branch office in May 1957⁽⁶⁾.

At that time almost all exports from Japan were SKD trucks. Japanese staff members from the Branch Service Department directed local workers to assemble trucks without cabs by using hoist cranes, forklifts, and wooden framed equipment. Coach builders put coach works on the naked chassis. Dealers had the responsibility for this coach works, and customers paid Bangkok Branch of Toyota for the chassis.

Since the first 13 dealers were miscellaneous shops and rice mills, they did not develop their own direct sales systems. Therefore, these dealers brought customers' orders to the branch office, and they were commission-based dealers, bringing customers to the branch office. This commission-based system was called the "After Sales Service Allowance". This was a mixture of sales commission and reward for collection of bills⁽⁷⁾.

In the 1960s, the industrialization of Thailand was promoted by the import substitution policy. In October 1961 the New Industrial Investment Promotion Act was promulgated. In 1961, the Thai government introduced the Automobile Industry Promotion Policy, and Ford Motor established a joint venture with Anglo Thai (Inchcape), starting CKD assembling. This is considered to be the beginning of the Thai automobile industry. By this law the import tax on CKD parts was reduced by 50%. In addition, materials and equipment were also exempted from import tax. By the time investment incentives were suspended in 1969, 11 automobile companies had started assembling in Thailand⁽⁸⁾.

The amended Industrial Investment Promotion Act of 1962 provided more incentives to foreign car manufacturers. Therefore, Toyota decided to use the incentives garnered by this law to establish Toyota Motor Thailand with capital of 11 million baht. This was the Toyota's second foreign plant after its Brazilian counterpart. This plant started production in December in 1964 to make the "DA Truck" by SKD, and "Tiara", "Stout", and "Dina" by CKD. This plant had some important processes such as body welding, painting, assembling chassis, and general assembling.

Toyota's export to Thailand increased around 1967. Its export to Thailand was only 2,300 in 1966, but it increased to 4,200 in 1967, 9,000 in 1968, and 10,700 in 1969, accounting for 20% of the Thai market⁽⁹⁾.

In the first half of the 1960s, Toyota and other Japanese automobile manufacturers had to transfer repair and SKD assembling skills of large trucks to workers and engineers, and Toyota had to teach white-collar office workers know-how related to dealer contracts, installment sales plans, credit account management, and parts inventory management. In the late half of the 1960s, when Toyota increased its passenger cars, a high level of technology was transferred through on the job training. In the 1970s Toyota paid more attentions to technology and know-how in marketing and after service. It established its own "training center" to educate and train service men, parts and components men, and salespersons⁽¹⁰⁾.

In the 1960s some automobile plants started operations, but they simply imported CKD parts and components and assembled them. So, the Thai government issued a circular notice after establishing the "Committee for the Automobile Industry Development" to discuss the development of the automobile industry.

In 1971 the Ministry of Industry announced the protection policy of domestic automobile industry for the first time, getting cooperation from the Thai Automotive Industry Association (TAIA). In this policy the Thai government limited the number of car models, and manufacturers had to meet the requirement of 25% local contents by 1993 (this local content regulation

was started in 1975). As a result, Japanese suppliers such as NHK Spring established their subsidiaries in Thailand⁽¹¹⁾.

The number of members of the Automobile Committee of the Japanese Chamber of Commerce, Bangkok (JCC) increased from 32 in 1974 to 45 in 1977. TMT expanded the existing plant in 1970. The first new Coronas began to come off the lines, increasing the monthly production capacity from 200 to 600. In order to use incentives for import tax based upon the localization policy, TMT decided to localize the production of the deck parts of Hilux.

In November 1972, when TMT began operations smoothly, a boycott campaign against Japanese products began and anti-Japan feeling exploded. In order to deal with this situation, TMT tried to localize itself. It opened its stocks in Thailand. Local dealers owned 11.5% and local banks and others owned 6.5%⁽¹²⁾.

As TMT increased its production and sales in Thailand, it decided to build a second plant in the Samrong area in 1973, and the new plant started its operation in May 1975 with a production capacity of 600 a month⁽¹³⁾.

3. Organizational Response to the Localization Policy and the Establishment of Personnel and Education Systems, 1978-1985

In the early half of the 1970s the Thai economy attained high economic growth, but by the middle of the 1970s trade deficits increased again. As a result, in January 1978 the Ministry of Commerce announced the New Localization Policy of Passenger Cars to ban the import of completely built passenger cars, and increased the import tax on CKD parts. In August 1978 the local-content ratio of parts was increased from the existing 25% to 50 % in 1983. TMT had to respond to further localization.

There was a conflict regarding local content between Japanese companies and their local counterparts. Local companies, which wanted to increase local-content ratio, established the Thai Auto-Parts Manufacturers Association (TAPMA) in June 1978, separated from the Section of Automobile Parts

and Components of the Thai Industrial Associations where Japanese parts manufacturers were influential⁽¹⁴⁾.

During the economic recession in the early half of the 1980s, TAPMA made a positive approach to governmental organizations including the Ministry of Industry to secure the domestic market. On the other hand, Japanese assemblers invited Japanese parts manufacturers to Thailand. Due to the development of the parts industry, the Thai automobile industry as a whole developed.

Furthermore, Japanese parts and components manufacturers entered the Thai market to supply their products to assemblers, responding to the high value of the yen following the "Plaza Accord Agreement" in 1985. The number of members of the JCC's Automobile Committee increased from 45 in 1978 to 78 in 1989. Since this subcommittee became large, it was separated into two subcommittees: the Four-Wheel Automobile, and Parts and Components.

Through these committees the JCC advised on localization policies by talking with the Ministry of Industry, BOI, the Automobile Working Group, the Japan-Thai Trade and Economic Committee, and the Thai Automobile Industry Association. Accepting a request from the JCC, the Ministry of Industry froze the local-content ratio at the level of 45% in 1982⁽¹⁵⁾.

As local content increased, it was necessary to realize a mass-sales system to achieve an economy of scale. Therefore, TMT tried to improve the system and management of dealers, educating their employees to increase sales.

At the beginning of TMT, it had about 20 dealers, which were originally small-scale miscellaneous shops and rice mills. TMT provided them with dealer loans with a low interest rate to set up showrooms, parts warehouses, and service shops. It also guided them with a package of shop design and operation manuals, providing various supporting dealer help and educated mechanics, parts men, and salespersons. In this way, by the summer of 1982, TMT had 70 dealers to develop a nationwide strong sales and after-service

network.

Almost of all were owned by Overseas Chinese families. Although shops were physically modernized, management remained as it was before. TMT tried to strengthen the management of dealers to educate and train the second generation of owners who had studied in the United States and had new sense of management⁽¹⁶⁾.

At the end of 1984, the Ministry of Industry announced the Automobile Industry Promotion Policy, in which 65% of local content was required in the case of passenger cars by January 1988 (it was later changed to 54% by July 1987) for the production of passenger cars and 62% for one-ton pickup trucks by July 1988.

To respond to this local-content policy, TMT tried to realize in-house production of press parts, establishing the wholly owned Toyota Auto Body Thailand in February 1978. It started to produce bodies for Hilux. It also produced press molds and body jigs because it was very expensive if these were imported from Japan.

Twenty-seven parts manufacturers participated in establishing the Toyota Cooperation Club (TCC) in February 1982. TCC trained and educated member companies to improve the quality of products, decrease defects, and prevent delays in delivery by training sessions, QCC activities, developing case studies and organizing study trips to Japan. The first Chairperson of TCC was Chalit of CH. Auto Parts (CAP)⁽¹⁷⁾.

In 1986 the Thai government announced the Local Production Policy of Diesel Engines. It emphasized the production of diesel engines for small pickup trucks which were the most popular in Thailand. The government also emphasized the export of these engines to realize scale merit.

TMT insisted on the local production of diesel engines to increase the local-content ratio and improve its image as a Thai company, manufacturing engines in Thailand through a joint venture between Siam Toyota Manufacturing (STM) and Siam Cement (40%), Nippon Denso (10%) and Industry Financial Corporation Thailand(10%), overcoming oppositions from the head-

quarters in Japan. It expected to increase the local-content ratio from 20% in 1989 to 80% in 1994. In the production of engines, it was difficult to realize an economy of scale if they could not produce more than 250,000 engines. Therefore, Toyota, Nissan, and Isuzu cooperated together to produce cylinder blocks, cylinder heads, connecting rods and crank shafts respectively⁽¹⁸⁾.

In order to increase the local-content ratio, Japanese part manufacturers invested in Thailand. In 1986 Koito Seisakusho established the Thai Koito as joint venture with a local company. Koito owned 49% of the capital and the Thai counterpart 51%.

Toyota started a horizontal division of labor in producing molds in South-east Asia, and TMT decided to manufacture molds within the company. TMT began exporting molds for fuel tanks to Malaysia in 1988. TMT had sent 10 Thai employees from TABT to Japan for training from August to November 1987.

By the middle of the 1980s the number of employees of TMT became 1,150, and the number of Japanese staff members was 11. Thai managers including departmental managers and chiefs of sections increased to 39. The number of university and special professional school graduates reached 200⁽¹⁹⁾.

As a result, it became the most important matter to modernize the organization of the company. First, it was necessary to educate employees. In 1983 TMT established the "Education Section" in the Personnel Department. They provided employees with systematic training based upon their hierarchical levels. Then, in 1989 the Education Section has its status raised to become the "Human Resource Development Center", which is now called the "TMT Academy"⁽²⁰⁾.

The Thai government, which was promoting the development of the automobile industry by increasing local-content ratio, was influencing foreign companies to promote local employees to management. In 1987, when TMT celebrated its 25th anniversary, it decided to follow the governmental policy. In October 1987 TMT began reorganization. First, Japanese were taken off the positions of departmental manager, and they were appointed as advisors

or coordinators. TMT also started regular rotation and promotion of local employees⁽²¹⁾.

During this period, TMT tried to improve the production floors. When Takeshi Takahashi was appointed as factory manager of TMT in February 1984, the shop floors were very dirty and there were slippery and dangerous places. In August 1984 he started a 4S campaign, stating as follows:

I tried to clean up the factory, but I could not find any trash cans and brooms in the factory. There were smoking people, but there were no ashtrays. I started with purchasing brooms and ashtrays and making trash cans.

Takahashi, visiting the factory every day to pick up trash on the floor, ordered the managers and leaders concerned to clean up the dirty spots. He also tried to improve the quality of the products by establishing a "Quality Assurance Department" independent from the Technology Department and QCC activities⁽²²⁾.

4. Rapid Expansion of the Automobile Market and the Response to Liberalization Policy, 1985 to 1993

Thailand experienced economic stagnation from 1985 to 1986. However, in 1986 exports of light industry goods and agricultural product began increasing. In addition, investment from Japan and Taiwan increased due to foreign exchange coordination following the Plaza Accord Agreement in 1985. As a result, the Thai economy grew rapidly in the late half of the 1980s, experiencing 10% to 12% annual growth rate. This brought an increase of personal income, which increased consumption. The production of automobiles in Thailand increased from 90,000 in the previous period to 210,000 in 1989, and Thailand became the largest automobile production country in ASEAN. The number of automobile production increased to 300,000 in 1990, 450,000 in 1993, and 570,000 in 1995⁽²³⁾.

How to increase production to respond to rapidly expanding automobile market became a very important problem. In September 1989 TMT moved from a single shift to two shifts because it was difficult to meet the increasing need for automobiles. Finally, TMT could not produce enough automobiles to meet the need in the late half of 1991. TMT had to make a decision to give up the production of either the Hilux or passenger cars. TMT selected to continue with passenger cars because TMT thought motorization meant the rise of a mass market of passenger cars. TMT increased the production from 1,700 to 2,200 monthly in 1992⁽²⁴⁾.

Japanese parts manufacturers tried to increase local supply to respond to increasing production by assemblers. Thai Koito increased its capital from 56.8 million baht to 113.6 million baht to expand its existing factory. Jidosha Buhin Kogyo also expanded its local factory.

Some Japanese parts manufactures entered Thailand for the first time. Toyota Gosey established TG Ponpara in January 1994 to produce synthetic resin products such as wheel steering. Tokai Rika and Toyota Boshoku established Thai Seat Belt with local Summit Auto Seat Belt in June 1994. Tokiko established Tokiko Thailand with local parts manufacturers to produce shock absorbers in March 1993. Aisin Seiki established Siam Aisin with Siam Cement and others to produce various auto parts in October 1996. These are merely a few examples.

Since the Thai government protected the domestic automobile industry carefully, the production of automobiles could not meet consumer needs. So, consumers were forced to buy relatively high-priced cars. Considering the worldwide trend of liberalization and consumer needs, the Thai government began introducing a liberalization policy in the automobile industry to remove a ban on importing small-sized cars in 1990. Moreover, customs on completed cars and CKD parts were reduced drastically⁽²⁵⁾.

This liberalization policy had an impact on the Thai automobile industry. First, the price gap between passenger cars and commercial vehicles became small, and consumer demand for passenger cars increased. Second, the price

gap between imported cars and locally produced ones also was reduced.

In 1993 liberalization further progressed, and construction of new plants was approved. So, some automobile manufacturers entered the Thai market. In 1994 BOI decided to give incentives to auto assemblers located in local areas so that Thailand would be the central base to export completed cars. As a part of liberalization, the import tax on materials for parts was reduced by stages. A local-content ratio of 54% remained for passenger cars. However, local content infringed the TRIM of GATT, and its removal was expected in five years.

In order to respond to the rapid growth of the automobile market, TMT built a third plant in Samrong in January 1990. However, as they tried to increase production, they had problems ensuring the quality of products. As a result, TMT tackled it through a "Year of Quality Movement". Quality was improved drastically within two years.

As localization progressed, the operations and organization of TMT changed to be managed by Thai employees. Until the middle of 1987 department managers who controlled functional operations were all Japanese. TMT always had to consult with HQ in Japan and imitate its personnel management including promotion. Japanese were excluded from the positions of section and department management. They put many Thai employees in these positions.

By 1987 individual departments were required to make five-year plans. Whenever new Japanese bosses came from Japan, they changed existing plans. This made Thai people confused. Therefore, departmental plans were discussed in the meetings of departmental managers where top management approved these plans. These plans were fixed as departmental plans. Annual plans were also made.

In this way, "Thainization", which meant "management by Thai", had become popular in 1987. TMT developed this idea further after 1992. The process of Thainization was clearly shown in some figures. Between 1988 and 1994, while the number of total employees increased from 1,287 to 3,712, the

number of Japanese expatriates only increased from 14 to 26. The Thai managers increased from 106 to 212 in the same period. As Thai employees obtained opportunities to get promotions, a promotion system was established, creating a "Promotion Committee"⁽²⁶⁾.

In September 1992, monthly sales of TMT reached more than 10,000 cars. At the same time, the market structure was changing. Sales of passenger cars increased more rapidly than those of commercial vehicles, which showed the coming of an advanced-country type of motorization.

Under these circumstances, an annual production of 200,000 cars was expected by the early 1990s. As a result, in March 1992 TMT bought a piece of 2 million m² land for the construction of a new plant in Gateway.

Regarding exports, in 1987 Siam Nissan exported five one-ton pickup trucks to Pakistan and 40 passenger cars to Brunei. Mitsubishi took leadership in exporting on a full scale. Mitsubishi, as a global strategy, began exporting cars from Shitipole in Thailand to Canada Clyster in January 1988, making a plan to export 100,000 in six years. In 1992 Mitsubishi began exporting its one-ton pickup truck to Europe.

Toyota followed Mitsubishi, and in 1992 TMT began exporting one-ton pickup trucks to Laos and Pakistan. It worked out a plan to increase production capacities by three times to 150,000 by 1993 to export on a full scale. The main export model was Hilux, and it was expected to export 50,000 cars annually to the United States, Europe, and Indochina as well as Japan. In February 1993, TMT planned to increase production capacities to 200,000⁽²⁷⁾.

In October 1988 a "Memorandum on a Brand to Brand Complementation Scheme (BBC)" was agreed upon at the 20th ASEAN Economic Cabinet Members Meeting, emphasizing economy of scale and accelerating regional trade. As an incentive, when the value added of BBC products in ASEAN is more than 50%, they are given a minimum 50% of the preference bound tariff rate.

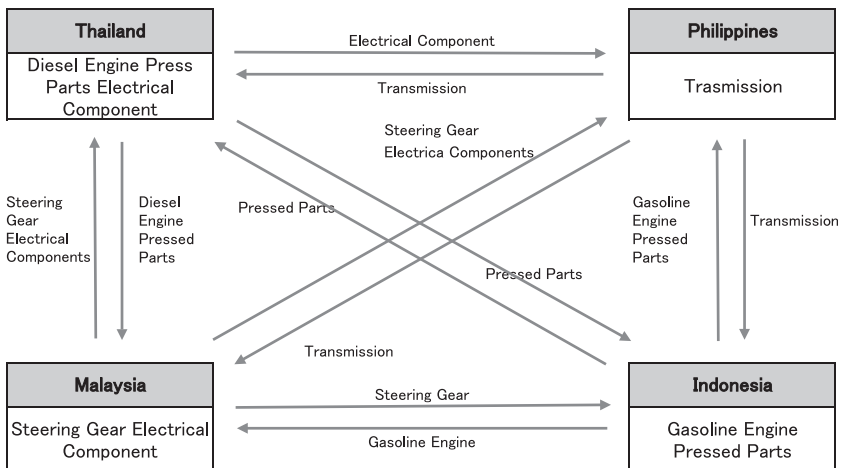
Toyota, which had production bases in each ASEAN country, tried to assemble competitive cars in each country by supplying parts effectively. Toyota introduced a policy to consider the Southeast Asian market as a

whole. Toyota established Toyota Auto Parts Philippines and T&K Auto Parts in Malaysia for mutual complementary and intensive production of parts and components in ASEAN countries⁽²⁸⁾.

Toyota established Toyota Motor Service Singapore in Singapore to manage this complementary system. In 1991 they developed a complementary supply of parts among production bases among ASEAN countries on a full scale in 1991. By using BBC they distributed shock absorbers from Malaysia to Thailand and pressed parts from Thailand to the Philippines. In 1992 transmissions were distributed from the Philippines to Thailand, Malaysia, and Indonesia, and steering gears were distributed from Malaysia T&K (see Chart 1).

In April 2001 Toyota established Toyota Motor Asia Pacific (TMAP) in order to respond to local markets by pricing and planning of sales promotions. In May of the same year, TMAP established Toyota Service Parts Consolidation Center Singapore in order to develop effective distribution of parts among countries in Asia.

Chart 1 Toyota's Parts Complimentary Plan In ASEAN Countries



Source: Toyota Motor Corporation.

In addition, TMT, which has become a large and established company, was expected to make a social contribution to Thailand. In 1992 the Thai Toyota Foundation was established with a fund of 30 million baht. In 2000, the fund increased to 400 million baht. Its activities included aiding education, improving life, and environment, and cooperative activities with other organizations. In the “Corporate Image Survey” conducted in December 2001, TMT was selected as No. 1 among local and foreign companies⁽²⁹⁾.

5. The Birth of the Asian Car and the Currency Crisis, 1994 to 2003

In 1992 Toyota decided to develop a special car for emerging markets, especially Asian countries. The Asian passenger car market was expected to grow with the rise of middle-class people in the future, but imported Japanese cars became very expensive due to the high value of the yen. Korean and American automobile manufacturers began chasing after Japanese counterparts. Their plan was to develop low-price cars suitable for the Asian market without excessive quality and functions by cutting production costs by 5 to 10%⁽³⁰⁾.

TMT was selected as a production site for Asian cars because it was the top automobile manufacturer in Thailand, which was coming into the motor car age. As a result, the development of the “Asian Car (Soluna)” started through the cooperation between Toyota HQ and TMT. Ninnart, who was the Manager of the Department of Technology at TMT, led this project under the slogan of “Producing Cars for Thai by Thai”.

In 1997 TMT announced it would sell the lowest-priced Soluna for 327,000 baht, which was the first mass-produced passenger car which was sold at a price less than 350,000 baht. In order to decrease the cost, parts were produced in Thailand as much as possible. At that time, the local-content ratio was 54%, but the Soluna’s local-content ratio was expected to be 70%.

The Soluna was very popular, and production and sales started smoothly.

However, its popularity came not from the image of the car for Thai but from TMT's established reliability, durability, safety, and economy. Introduction of the Soluna brought not the direct effect to develop the impression of cars developed by Thai but the indirect effect to increase the brand image of Thai Toyota and the morale of Thai employees.

In the process of motorization, TMT began making strenuous efforts to improve the production floors because it faced changes of environment such as increasing production volume, the high value of the yen, and intensive price competition with rival automobile manufacturers. So in the case of the Soluna, TMT set up the price first. Then, it had to adjust to a certain range of cost after subtracting the profit instead of compiling up the cost⁽³¹⁾.

In 1995, TMT replaced production for stock replenishment with a build-to-order system on a monthly basis which was expected to be weekly based in the future. At the same time, it introduced the *kanban* system in transaction with Japanese part manufacturers within 30 to 40 km.

TMT began introducing the Toyota Production System on a full scale. In April 1994 Takeo Yahagi was transferred from the Takaoka Plant in Japan to TMT as senior vice president in charge of production. He said, "The Toyota Production System means a cycle of finding problems, seeking their causes, and solving them." After training six Thai as trainers, they spread the "idea of *kaizen*" among team leaders and foremen.

TMT also paid attention to human resource development. In June 1996 it established TMT General Education and Training Center which was the largest among centers in foreign countries. In addition, they trained capable employees among dealers. As localization of management progressed, English was used as a means of communication between TMT and Japanese HQ as well as between Japanese expatriates and Thai employees⁽³²⁾.

In April 1996, ASEAN Industrial Cooperation Scheme (AICO), a comprehensive and full-scale supplementary agreement, was enforced. Laos and Myanmar participated in ASEAN in 1997, and Cambodia in 1999. As a result, ASEAN included all Southeast Asian countries. Automobile manufacturers

were forced to make a new scheme to respond to the ASEAN Free Trade Area (AFTA), which decided to decrease import tax among ASEAN countries drastically in 2003³³⁾.

The Asian Currency Crisis, which happened in June 1997 in Thailand, caused serious damage to the automobile industry in ASEAN. To deal with the situation, ASEAN agreed to decrease customs to 0% to 5% in 2003, which had been planned to be done in 2008. In July 1997 depreciation of the baht was announced. The Thai economy became stagnant, and demand for automobiles dropped drastically. The automobile market shrunk by 38.4% in 1997 and 60.3% in 1998. As a result, production lines of the Samrong and Gateway plants were stopped completely from the middle of November to December. TMT tried to maintain a "No Lay-Off Policy". However, the situation was very serious, and it had to resort to home lay-offs and proposed early and voluntary retirements.

The Thai government encouraged Japanese auto manufacturers to make Thailand a world base to export pickup trucks by concentrating the auto parts industry in Thailand by making use of the favorable exporting environment. This required the independence and self-sustenance of Japanese subsidiaries to realize competitive export ability. Koichi Shimokawa discusses the situation as follows:

Hitherto, development of cars which were produced in this area was done at Headquarters in Japan. Regarding important parts, particularly engines and driving gears, Japanese suppliers enforced VA/VE activities. These activities were expected to be localized, and TMT would take all the quality assurance responsibility. Therefore, TMT gave a broad range of authority to local engineers and started transactions with local suppliers by an approved drawing system and quality assurance³⁴⁾.

Facing a serious crisis, Japanese companies began increasing exports of their products. Japanese companies changed their policies from making Thai-

land a base as regional division of labor in ASEAN to making Thailand an important base for global business.

The currency crisis brought about by depreciation of the Thai baht became a favorable wind for exports of completed cars, KD parts, and components, and exports brought profits. This was a very good opportunity for Thai employees to understand how it would be difficult to catch up with Japanese products in the terms of quality and functions. As exports from Thailand increased, the enhancement of quality of products was strengthened, and level of technology steadily improved. The quality of parts was particularly improved with the years.

In summer 1998, exports of pickup trucks from Japan to Oceania were transferred to TMT. Some parts were also exported to South Africa and other places. Japanese parts manufacturers like Denso, Toyoda Gosei, Sango and others began exporting their products to Japan, the United States, India, and other countries.

Japanese auto manufacturers cooperated together through the Japanese Chamber of Commerce, Bangkok. They organized a working group composed of purchasing and buying managers. They discussed two things. One was the "global level of quality". The other was supporting suppliers financially. In October 1997 TMT had a meeting to explain its production plan. It talked to 200 people from parts manufacturing companies that TMT would support in the crisis. TMT provided them with funds for model-change equipment and working capital. As a result, no parts manufacturers went bankrupt. In addition, the quality improvement movement improved the quality of parts produced in Thailand, and they came to supply Ford and GM which were making Thailand an export base⁽³⁵⁾.

6. Establishment of an Export Base and Global Standard, 2004 to 2006

Around 2002 every auto manufacturer in Thailand began increasing exports. There are two reasons. First, many Japanese parts manufacturers

entered the Thai markets, and they transferred technology and management know-how to Thailand. In 2005 more than 1 million automobiles were produced in Thailand, accounting for about 7% of the total export values. Second, Asian countries made FTA agreements with many countries outside ASEAN. For example, Thailand made an FTA agreement with Australia, and 15% of import tax on passenger cars was removed in Australia⁽³⁶⁾.

In August 2000, TMT announced that in Thailand, which had become the biggest production base in Southeast Asia, it would realize 100% local-content ratio. At that time, TMT was producing one model of commercial vehicle and three models of passenger cars. The local-content ratio of commercial cars was 80%, and 55% to 78 % for passenger cars.

In March 2000 TMT made the “Thai for Excellent Project Plan”, and explained it to 110 Japanese and local parts manufacturers. As part of this project, TMT asked local manufacturers to produce products imported from Japan in Thailand. TMT also asked manufacturers of industrial materials such as forging pressed products and iron sheets to invest in ASEAN⁽³⁷⁾.

Many Japanese companies entered the Thai market. In November 2000 Sumitomo Denko Brake Systems established SEI Brake Systems (Thailand) to produce pads for disk brakes. In September 1999 Sekisui established Sekisui S-LEC (Thailand), and in April 2002 it started to produce special resin sheets for windshields. In February 2002 IHI established IHI Turbo Thailand to produce turbo chargers. Nikof established Nikof Thailand to produce resin for automobile fasteners. Aichi Seiko and Toyota Tusho also established local companies to produce automobile parts⁽³⁸⁾.

Other companies such as Character (Thailand) and STB Textiles expanded their plants, judging they could secure cost competitiveness in producing their products in Thailand. As a result, TMT had 117 first-tier parts manufacturers (including 35 local companies) and more than 2,000 second-tier part manufacturers. The 35 local companies were owned by almost the same five business groups.

TCC played a very important role in transferring the Toyota Production

System (TPS) to these local companies through self-study groups and the TPS Dojo (drill hall). In TPS self-study groups, they organized five groups, and one group was composed of five to eight companies. Member companies were to learn TPS from the leader company of the group.

In the case of the TPS Dojo, they selected five companies which had a certain technological level. They set up a model line in one company, and member companies learned the pull-production system. Professionals of TPS were sent for three weeks from Toyota HQ in Japan at TMT's cost. TCC also provided staff members of member companies with education and training including top management and middle management seminars⁽³⁹⁾.

By the latter half of 2002, the Thai automobile industry had become active. TMT moved to two shifts at Samrong Plant which produced pickup trucks. In 2002 Toyota was expected to transfer production of an export model pickup to Thailand, TMT decided to expand its production capacity to 300,000 units annually. In addition, the Gateway plant moved from one shift to two shifts to produce three types of passenger cars: Camry, Corolla, and Soluna Vios.

In August 2004 Toyota introduced a new Asian strategy, announcing the Innovative International Multi-purpose Vehicle (IMV) which was to be produced in ASEAN. The first IMV was Hilux Vigo, produced in Thailand in September 2004. The IMV was expected to be produced in 11 countries including Thailand, Indonesia, South Africa, Argentina, India, Malaysia, Venezuela, Vietnam, Taiwan, and Pakistan, and to be sold in more than 80 countries in Southeast Asia, South America, Africa, and the Middle East. In addition, parts and components for pickup trucks and multipurpose vehicles were expected to be exported to Toyota's manufacturing companies in nine countries.

All the cars produced at the Hamura Plant of Isuzu, a member company of the Toyota Group, were completely transferred to TMT, producing the Hilux Vigo in August 2004, and Thai Auto Works began manufacturing the Fortuner in January 2005. In January 2007 the Ban Pho Plant was established

to produce only the IMV.

The IMV project was a response to the rising automobile industry in China, and Toyota developed a tripod system composed of China, ASEAN, and Japan with a concept to develop a division of labor and self-sustenance by differentiating car models and obtaining autonomous competitiveness. Toyota and its suppliers invested 700 million dollars to make Thailand a global production base.

Toyota Technical Center Asia Pacific Thailand (TTCAP) was established in October 2003 in a suburb of Bangkok, which has more than 600 staff members today. This center was established to develop trucks and passenger cars which would be produced in the Asian market. This was a reflection of Toyota's slogan "to localize the production base which is closest and respond to the diversified consumer demand of the market."

One of the most important factors which made Thailand a production center in ASEAN was a drastic increase in local-content ratio. Before the IMV, TMT's local-content ratio was 60%. Around 2000 Toyota promoted major parts manufacturers of the group to enter the Thai market. As a result, the local content ratio went up to 96%. Cooperation from parts manufacturers was necessary to develop the IMV.

By the time of the new millennium, cars could not just be sold for a low price. Gradually, Asian cars were expected to change from "Asian Quality and Asian Price" to "Global Quality and Asian Price". Moreover, TMT expanded its production capacity from 70,000 to 200,000 in 2004 to make Thailand the "export base for Asia and Europe"⁽⁴⁰⁾.

TMT also considered the timing when ASEAN expected to develop AFTA in 2003 to decrease customs on regional trades to less than 5%, creating a huge market of 500 million people and a GDP of 600 trillion dollars. Japanese, European, and American automobile companies invested in Thailand, where they could procure parts and components easily to assemble automobiles to export outside the region. In this way, TMT started production and export of the IMV. In July 2010 TMT celebrated the production of 1

million IMVs. Needless to say, the IMV project made TMT leap to become a global production base.

TMT promoted localization of management and tried to solve local problems without reference to HQ. Ninnart was promoted from executive managing director to senior vice president. Three more Thai were promoted to board members. Out of 14 board members, five were Thai including Pramon, the Chairperson, whom TMT invited from Siam Cement⁽⁴¹⁾.

7. Environmental Problems and the Development of the “Eco-car”, 2007 ~

Toyota drew a scenario to make the overseas market an engine for the growth of the company since the total demand for automobiles in Japan had failed to grow. In August 2007, Toyota announced that the target sales of the Toyota group including Daihatsu and Hino would be around 10.4million units, targeting emerging markets such as China, India, and Southeast Asian countries.

In 2000 Toyota had made a plan to increase production in Asia including China to 2.1million units. The IMV was developed as the spearhead to develop emerging markets. To increase sales in Indonesia, Thailand, India, and Brazil, Toyota expanded its production capacity including opening the Ban Pho Plant in spring 2007. In addition, Toyota started developing an “Entry Family Car (EFC)” at a price of 700,000 yen and expected to start selling in India in 2010.

However, in Thailand sales of the cars dropped by 7.5% to 631,251 in 2007. This was due to a slowdown of consumption and a steep rise in gasoline prices after a military coup in September 2006⁽⁴²⁾.

Toyota reorganized operations in Southeast Asia including Thailand. Toyota established Toyota Motor Asia Pacific Thailand (TMAP Thailand) in Samut Prakan to control production bases in Asia. Ryoichi Sasaki, the Managing Director of Toyota Motor Corporation and the former president of TMT became president of this company. In addition, he became president of two

other companies: TMAP Thailand which is a production subsidiary in Thailand, and Toyota Marketing Asia Pacific Singapore, a marketing and sales supporting company in Singapore.

The purpose of TMAP Thailand was that Thai staff members, who carried out the IMV project, would support production in Asia as a whole. TMAP Thailand was in charge of manufacturing, purchasing, physical distribution, and quality assurance. Therefore, almost all the staff members were transferred from TMT.

TMAP Thailand supports 11 production bases including six assembly plants in seven countries and areas. Toyota tried to decrease costs and increase local-content ratio by integrating the purchasing functions of these six assembly plants. This company also tried to transfer technology to individual production bases. On the other hand, TMAP Singapore was in charge of marketing and sales operations, supporting all the sales activities in Asia.

In August 2005 Toyota established the Asia Pacific Global Production (Training) Center (AP-GPC) in Toyota Motor Asia Pacific (TMAP) in Samut Prakan. Twenty-four staff members, who are approved by the Global Production Center in Japan, are always on site. This center was expected to have a hub function to support production, to share know-how, and promote staff exchange and human resource development⁽⁴³⁾.

At AP-GPC they carry out skill training of eight production processes such as pressing, painting, assembling, and quality management by using real production lines. This training center is composed of three departments: shop floor management development, production support and management, and basic skill training.

In August 2006, Toyota announced that AP-GPC in Thailand would accept employees for training from Toyota's production bases in the Philippines, Taiwan, Indonesia, Vietnam, India, Malaysia, and Australia in addition to Thailand. Before this announcement, employees outside Thailand had training in Japan. Furthermore, in November 2006 Toyota transferred all the functions of TMAP to Toyota Technical Center Asia Pacific Thailand, and

TMAP was closed⁽⁴⁴⁾.

In Thailand, as the economy grew at a 5% of annual growth rate, people's income also increased. Consumers began having more interest in passenger cars than in pickup trucks. The Thaksin administration noticed this change, and it developed an "Eco-car Policy", a policy to develop a small car in 2004. However, it introduced a standard which was close to the Japanese light-type car (less than 3.6 meters long and less than 1.63 meters wide). Automobile manufacturers that did not have light-type car lines, such as Toyota and Isuzu, opposed this plan. As a result, this eco-car plan was not realized.

It had become necessary for the Thai government to realize this small car project in order to enhance its presence in the global automobile industry. In November 2006 the Surayud Administration confirmed this eco-car project by following the Thaksin Administration's idea to give incentives to small-car production. At the same time, the Thai government placed this eco-car project as a pillar of exports.

The eco-car project had three objectives. The first objective was to realize the "Detroit of Asia" plan to become one of the important automobile production countries, attaining a production of 1.8 million cars a year. The second was to establish a production base of world niche cars following pickup trucks. The third was to improve the balance of trade by decreasing crude oil imports and replacing energy-inefficient cars with efficient cars.

The producers obtained an incentive from BOI to be exempted from corporate tax for eight years. The Ministry of Finance decided to decrease the commodity tax on cars with less than 2,000 cc engine from 30% to 17%. The deadline for application was November 2007.

In June 2009 the Thai government introduced a new eco-car policy to become a country where hybrid and substitute energy cars were produced.

Honda received approval to produce eco-cars in October 2007, Nissan and Suzuki in December 2007, TMT in April 2008. Nissan started production of the March as an eco-car, and the Thai-made March was exported to Japan⁽⁴⁵⁾.

TMT planned to invest 6.642 billion baht to start production of 100,000 eco-cars annually in the Gateway Plant in November 2008. Fifty percent of the production was expected to be exported. Toyota tried to develop low energy-consumption cars. Finally, TMT is planning to start production of eco-cars in 2012.

Along with the Thai government's eco-car policy, TMT stated to realize an eco-car in three directions. The first was the use of substitute energy such as Compressed Natural Gas (CNG), B5 (5% of Bio Diesel Fuel in gas oil), and E20 (Bioethanol mixed fuel). The second was the improvement of diesel engines by introducing Diesel D1 (Bio Diesel Fuel) and diesel common rail. The third was the Introduction of a Variable Valve Timing Lift structure in gasoline engine and a hybrid engine.

In the concrete plan, TMT introduced E20 in all the passenger models. In 2009 it introduced the Corolla Limo CNG and the Corolla CNG (manual transmission). It also started to produce and sell the HV Camry in August 2009. This HV Camry was the first Thai-made HV vehicle to have been introduced to the Asia Pacific region. In comparison with the ordinary gasoline engine Camry, the HV Camry could improve fuel consumption by 30% and torque by 20%, decreasing CO₂ by 30%. Prices of these models were cut by 5% due to incentives⁽⁴⁶⁾.

8. Conclusion

In this paper, we analyzed how and why TMT has accumulated its own management resources to achieve self-sustenance through its 50-year history. In 2004 TMT became the world center for the IMV project. In this project, TMT has the responsibility of a value chain from designing and production to sales and exports without the mother factory in Japan. This clearly shows that TMT has become independent and can play its own role in Toyotas' global strategy.

At the same time, in addition to the analysis of TMT's strategy and structure, we analyzed the mutual reactions between TMT and other actors

in the automobile industry to form the automobile industrial cluster in Thailand. Here, we summarize this study and clarify the findings and their significance in the globalization of Japanese multinationals.

First, we looked at the changing strategies of Toyota. In the 1950s as the first stage, Toyota began exporting its products to foreign countries including Thailand. Then, Toyota established TMT in 1962. Toyota transferred production and management know-how to TMT. In the 1960s, the Thai government introduced the import substitution policy, decreasing customs on CKD parts. Furthermore, in 1969 TMT had to respond to the local-content policy of the Thai government. In 1971, completed cars were prohibited to be imported, and TMT had to meet a local-content ratio of 62% for passenger cars and 35% of pickup trucks by 1988.

In the 1990s, TMT entered the new stage. Thailand attained a high economic growth in the late 1980s, and the Thai government changed its policy to liberalize the import of small cars. In 1990 Toyota introduced a new strategy to develop an "Asian Car" to meet the increasing needs for passenger cars in Southeast Asia. TMT was selected. TMT developed a car, saying "A car for Thai by Thai". In 1992, TMT started exports of its one-ton pickup trucks to Laos and Pakistan, and a full-scale export policy was announced in February 1993. As a result, TMT came to achieve self-sustenance to play a role in Toyota's global strategies.

TMT's move to independence was accelerated after the Asian Currency Crisis. Toyota shifted to a policy of international division of labor, making Thailand an overseas production base. As a result, technology transfer between HQ and TMT came to be spontaneous and more sophisticated.

After the currency crisis, as the Thai market shrunk drastically, it was required to exports Thai-made cars. It was necessary to realize the global level of quality and functions. Furthermore, TMT's strategy to start the IMV project accelerated independence of TMT. Toyota positioned TMT as the world base of IMV. IMV was the first car which did not have a mother factory in Japan.

The strategy of TMT changed in 2004 when the Thaksin Administration proposed the idea of an eco-car. It was necessary for Thailand to be successful in a small-car strategy in order to heighten its presence in the world automobile industry. In June 2007 the Thai government embarked upon this eco-car project on a full scale. TMT will attempt to manufacture and sell eco-cars in 2012.

Some factors gave an impact on TMT to change its strategies. The most influential one was the Thai government's industrial policy. Particularly, until the beginning of the liberalization policy in the 1980s, the Thai government introduced an import substitution policy and a local-content policy. In the early 1990s it changed its import substitution policy to an export promotion policy, and exports became very important for Thailand after the currency crisis in 1997. After 2007 TMT responded to the eco-car policy.

In the 2000s the automobile industry in the ASEAN 4 developed, and ASEAN Free Trade Area (AFTA) came into sight. TMAP, TMAP Thailand, and TTCAP were established to coordinate purchasing, production, and marketing activities in Southeast Asia. In August 2005, the Asia-Pacific Production Support Center was established. In August 2006 it announced that it would accept employees of 12 Toyota subsidiaries in nine countries including Taiwan and India. The function of TMAP was integrated into TTCAP to become TMAP-EM.

Along the changes of strategies, TMT had to change its organization and train employees to realize these strategies. It made efforts to transfer technologies from production to sales and after service. Since TMT began to hire university graduates in 1963, it has been localizing management. In December 1969, Toyota established the first overseas general training center in 1969 to train local employees systematically.

In the middle of the 1980s, TMT began introducing TPS aggressively to ensure quality in the production processes. In the middle of the 1980s, the Thai government exerted influences over foreign multinationals to localize management. Following this policy, TMT supported localization of manage-

ment which was called “Thainization”.

In addition to the Thai government, TMT had to develop relationships with some other actors. As a hub of the automobile industry, TMT made a value chain in automobile industry.

The first aspect of the value chain was sales. In the beginning, Toyota cars were imported and sold. When Toyota came into the Thai market, its dealers were not strong. Therefore, Toyota had to introduce the modern concept of sales methods and after services to them.

The second aspect of the value chain was manufacturing. When TMT was established, it developed simple CKD by importing parts and assembling them. After the Thai government introduced the local content policy, TMT had to increase the local-content ratio. First, it invited Japanese functional part manufacturers such as Denso (radiator) and Nippatsu (suspension). Sometimes, TMT had to produce main parts such as engines and cab press parts for the Hilux by establishing TABT and STM.

TMT also had to develop local parts manufacturers. Through TCC, it transferred TPS to local parts manufacturers. Local contents increased with the introduction of the Asian Car, IMV, and eco-cars. Depending on the development stages of the automobile industry in Thailand, different types of Japanese parts manufacturers entered the Thai market.

In addition to local procurement, it became very important to procure parts within the ASEAN region. In October 1988, the BBC scheme was introduced. AICO was agreed upon in 1996, and AFTA was enforced in 2003. Here, we can find activities of multinationals that can be seen at the regional level between global and local.

In this way, Thailand became a center for production of cars in ASEAN by accumulating pressing, mold, sheet metal, and precision machining. This was accelerated as a result of TMT's strategies to exports Thai products and the localization of management.

The self-sustenance of TMT made Kyoichi Tanada say, “Considering 47 years of experience and the high quality of Thai engineers of TMT, I hope

designing and production may be all done in Thailand!⁽⁴⁷⁾

Notes

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- (5) Toyota Sales Co., *Motorization to Tomoni (With Motorization)*, Toyota Sales Co., 1970, p. 234.
- (6) *Ibid.*, pp. 230-231, 215
- (7) Sadao Kosaka, *Toyota Thai Monogatari (A Story of Thai Toyota)* (Toyota Motor Corporation, 2001), pp. 7, 8, 32-33
- (8) Sato and Adachi, "Nippongata Keiei to Gijutsu Iten: Thai Koku Jidosha Sangyo no Genba karano Kosatsu (Japanese Management and Transfer of Technology: A Study of Shop Floors in the Thai Automobile Industry," Economic Research Center, Nagoya University, *Chosa to Shiryo*, No.106 (March 1998), p. 3. Suehiro and Higashi, *Thai no Keizai Seisaku: Seido, Soshiki, Akuta (The Thai Economic Policies: Institutions, Organizations and Actors)* (Institute of Developing Economies, 2000), p. 134.
- (9) Kosaka, *A Story of Thai Toyota*, pp. 9-10, 14 and Toyota Motor Sales Co., *Motorization to Tomoni*), pp. 555-556.
- (10) Kosaka, *A Story of Thai Toyota*, pp. 9-10, 14.
- (11) Suehiro and Higashi, *The Thai Economic Policies*, pp. 134-135, 139.
- (12) Sumiko Kawabe, "Tai no Jidoushasanngyou Ikusei Seisaku no Jirei Bunseki: Jidosha Bukai no Katsudo wo Chushin ni (Automobile Industry Policies and Japanese Chamber of Commerce, Bangkok: Focusing on the Automobile Subcommittee)," *Josai University Management Review*, Vol. 3 (March 2007), pp. 20, 21-23.
- (13) "Umino Muko no Nippon Keiei (Japanese Management in Foreign Countries)," *Nikkei Busi-*

- ness, pp. 111, 112.
- (14) Suehiro and Higashi, *The Thai Economic Policies*, pp. 139, 139-140.
- (15) Sumiko Kawabe, "Automobile Industry Policies," p. 23
- (16) Ichiro Sato, "Thai Toyota no Genjo to Kadai (Present Situation and Issues of Thai Toyota)," *Toyota Management Review* (August 1982), pp. 74-75.
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- (25) *Ibid.*, pp. 97-102.
- (26) Hiroshi Imai, *Toyota no Kaigai Keiei (Toyota's Overseas Management)* (Dobunkan Shuppan, 2003), pp. 30-31, 42, 45, 47, 71-72, 89.
- (27) Kawabe, *Business History of Toyota Motor Thailand*, pp. 108-111.
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- (29) Imai, *Toyota's Overseas Management*, pp. 199-211.
- (30) Kawabe, *Business History of Toyota Motor Thailand*, p. 124.
- (31) Regarding the development of the Soluna, see Suphawan Srisuphaolan, "Gurobaru Senryaku niokeru Rokaru Dezain no Imi: Toyota Thailand niokeru Soluna Kaihatsu wo Chusin ni (The Meaning of Local Design in Global Strategy: Focusing on the Development of the Soluna in Toyota Motor Thailand)," Motoi Ihara, Takeo Kikkawa and Fumikatsu Kubo, *Ajia to Keiei: Shijo, Gijutsu, and Soshiki (Asia and Management: Market, Technology and Organization)*, Vol. I (Institute of Social Science, University of Tokyo, March 2002).
- (32) Kawabe, *Business History of Toyota Motor Thailand*, pp. 130-134.
- (33) Shimizu, "ASEAN," p. 4.
- (34) Koichi Shimokawa, *Jidousha Sangyo no Kiki to Saiseino Kozo (The Structure of the Automobile Industry Crisis and Its Reconstruction)* (Chuokoron Shinsha, 2009), p. 191.
- (35) Kawabe, *Business History of Toyota Motor Thailand*, pp. 143-144.
- (36) *Ibid.*, pp. 158-161.
- (37) *Ibid.*, p. 164.
- (38) *Ibid.*, pp. 164-166.
- (39) Regarding Thai local manufacturers of automobile parts, see Nobuo Kawabe, "Thai Jidosha

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(41) Kawabe, *Business History of Toyota Motor Thailand*, p. 188.

(42) *Ibid.*, p. 199.

(43) *Ibid.*, pp. 201-203.

(44) Briefing materials from AP-GPC.

(45) Kawabe, *Business History of Toyota Motor Thailand*, pp. 212-218.

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